FEMA

The C-4 Project: Moving Water to Prevent Flooding

Miami-Dade County, Florida

Miami-Dade County, FL - Hurricane Irene (1999) slammed into Miami-Dade County, causing heavy flooding, even in areas that had not been prone to inundation in the past. This was repeated a year later by Tropical Storm Leslie. Local emergency management officials decided that mitigation was necessary to minimize or eliminate the threat of repeated lowland and street flooding.

The Miami-Dade Flood Control Project, or C-4 Basin Project, was created to address the county's extensive flooding problem. The project built on the existing canal system, and its goal was to relocate excess water from one area to another so it could be absorbed into the groundwater or held in reserve. To handle the distribution of water, the entire region is crisscrossed by a 620-mile series of canals and waterways.

Work began on the C-4 Project in 2000. At the heart of the C-4 basin is the Tamiami Canal, which begins in the Everglades National Park and traverses the Miccosukee Indian reservation, the critical Pensuco Wetlands, and several municipalities before flowing into the environmentally-sensitive Biscayne Bay. The driving force of the C-4 Project is the forward pump station at the mouth of the canal, which is designed to push water flow downstream against the tide. A second station, at the mouth of the Miami River Canal in the C-6 basin, was built to offset the flow from the C-4 canal and prevent flooding upriver. There are three pumps in each station that can process approximately 4,500 gallons of water per second. One pump operating at that speed could fill an average swimming pool in three seconds.

For occasions when the canals cannot handle the water volume necessary to prevent flooding, an emergency detention basin, comprised of two reservoirs, was created to receive and store the excess water. In addition, a separate supply canal was built to divert excess water from the C-4 canal to and from the detention basin.

During the C-4 project, the bottom and sides of the Tamiami Canal were smoothed and reshaped, allowing the water to move through at a higher volume and speed.

The cost of the project totaled $70 million. The State of Florida was awarded $52.5 million from FEMA's Hazard Mitigation Grant Program. The Quality Neighborhood Improvement Program, along with the South Florida Water Management District and Miami-Dade County, contributed funds to for the remaining 25 percent.

The C-4 project has reduced serious flooding, leading to fewer insurance claims, reduced repair costs, fewer wages lost to time away from work, and increased public safety.

Frank Reddish, Emergency Management Coordinator for the County, summarized the impact of the flood mitigation project: "The success of a project is realized when you use it, and it works. The first time we turned on the pumps was due to heavy rainfall in the C-4 basin in December of 2001, and it didn't flood...When Hurricane Katrina [struck in August 2005], we had tremendous rainfall, and again we had no flooding."

Quick Facts

Sector:
Public

Cost:
$70,000,000.00 (Estimated)

Primary Activity/Project:
Flood Control

Primary Funding:
Hazard Mitigation Grant Program (HMGP)